

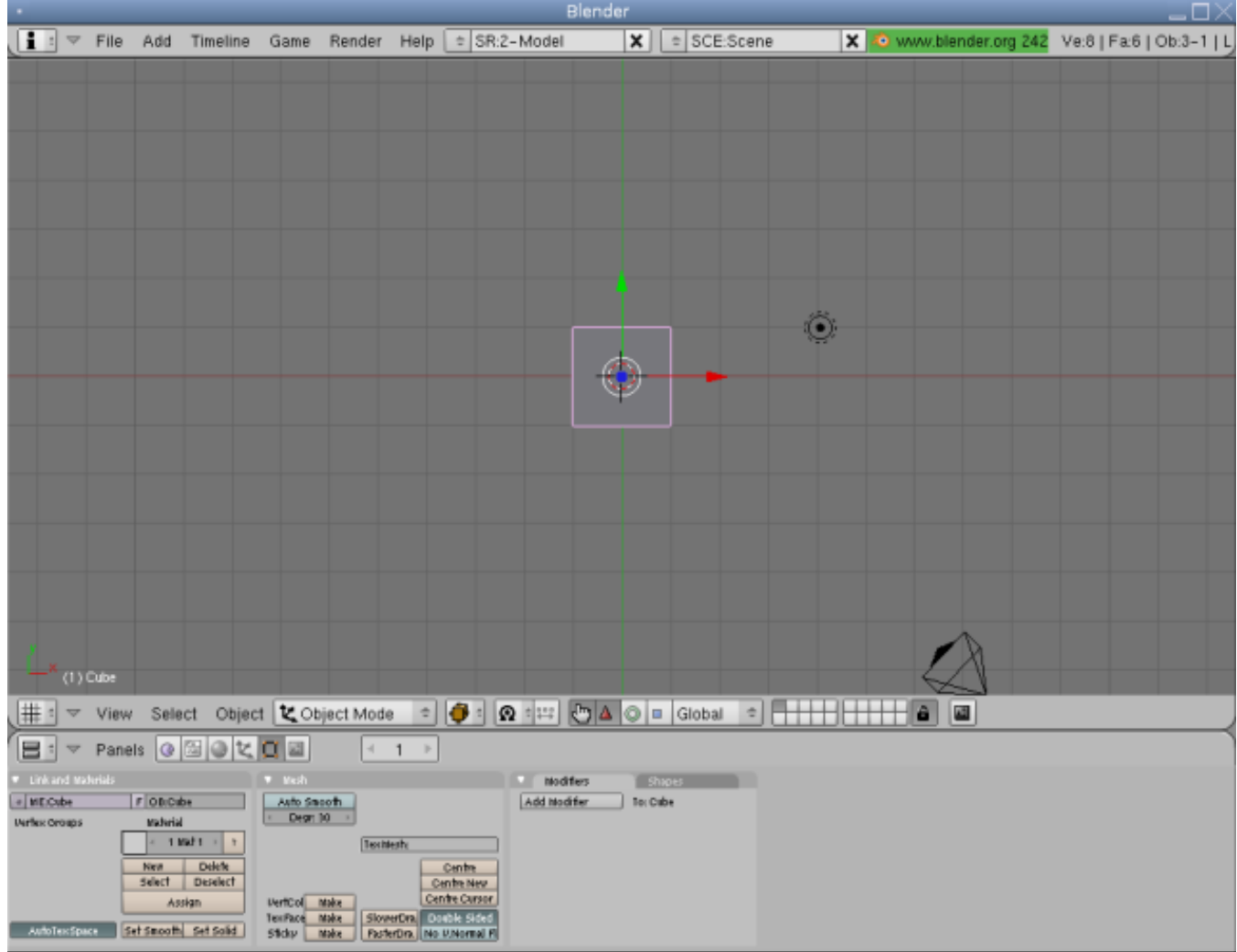
BLENDER & GIMP

Simple Object Translation

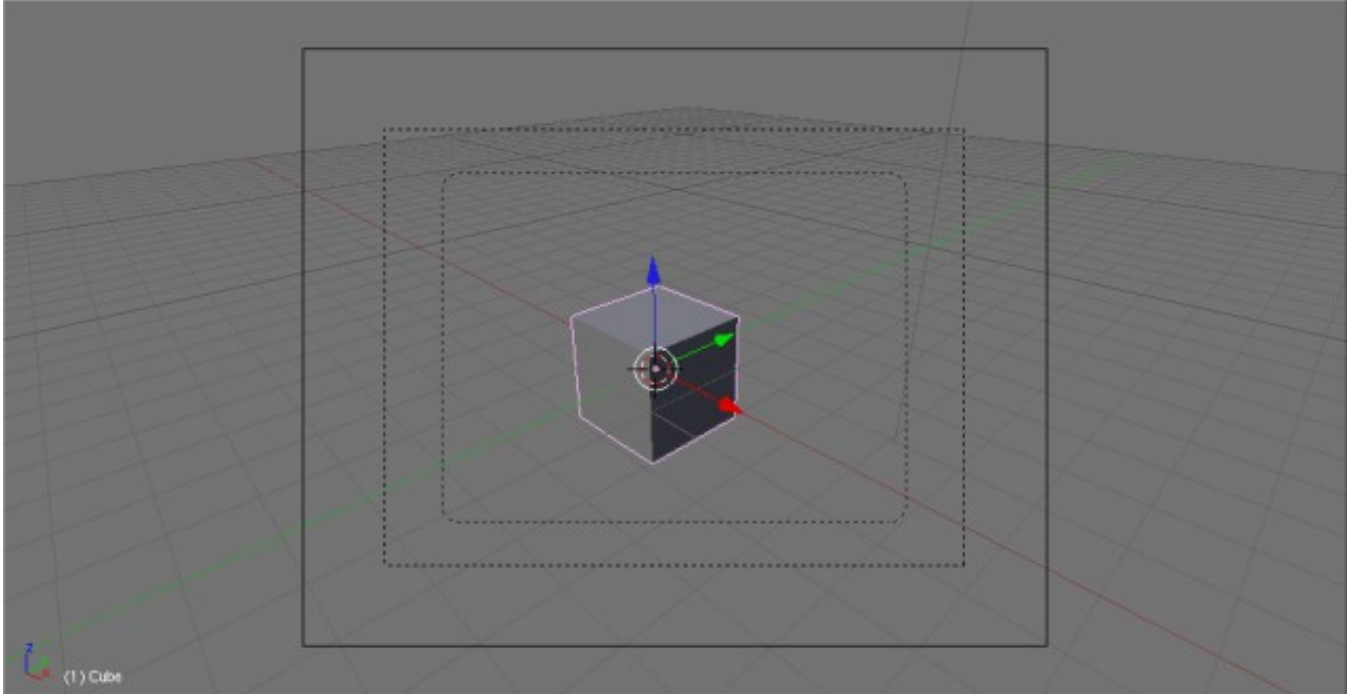
These tutorials will help you to learn to do simple animations with blender. In this first of three tutorials, you will be moving a cube from one side of the screen to the other. Along the way you will begin learning some blender concepts that you can use for developing more complex animations as you gain additional skills. Blender is a very complex piece of software. You may feel overwhelmed with all of the features of blender. They take time to learn, and if you are new to using blender , please remember it is often best to learn to crawl before you can walk, and to learn to walk before you can run. This tutorial section will start you off crawling, at a very slow pace. We will not be learning texturing, or modeling, or how to add a material, or lighting, or any of the other myriad things one can do with blender. Those are subjects for other tutorials at other times. We will simply be learning how to make a cube move.

Before I start off, let me help you understand something about how blender was designed. I have read that it was designed with the concept of efficient work flow. It is my understanding that the developers originally designed it so one could always have one hand on the keyboard and one on the mouse. That way, you would always be able to maximize your production efficiency. If you keep this idea in mind about blender, in time, while this may not make a lot of sense now, you may come to understand more of the logic behind blender's setup. That is all I will say about that. Let's begin.

When you open up blender you arrive at a default view:

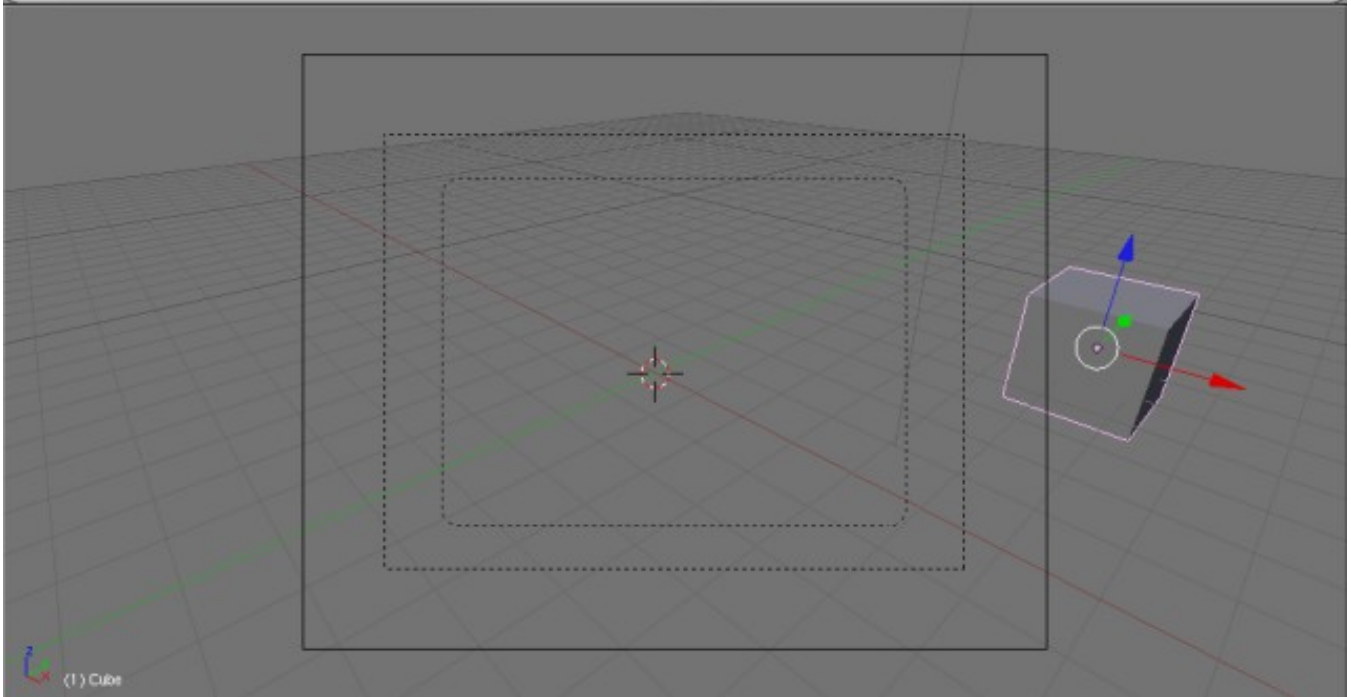


You will see amongst others, a 3d window with a camera (lower right) , a light, and a cube object (it used to be a plane). The cube object is selected by default in blender and it is highlighted in pink as shown above. The default view is looking down on the scene from above. So it is referred to as Top View. In this tutorial we will be viewing the scene from the camera's perspective, so we need to change to the camera view. At the bottom of the 3d window there are a few headings titled View, Select, Object. Click on the View heading and then select Camera from the pop-up window. You will now see the 3d window change to Camera View:



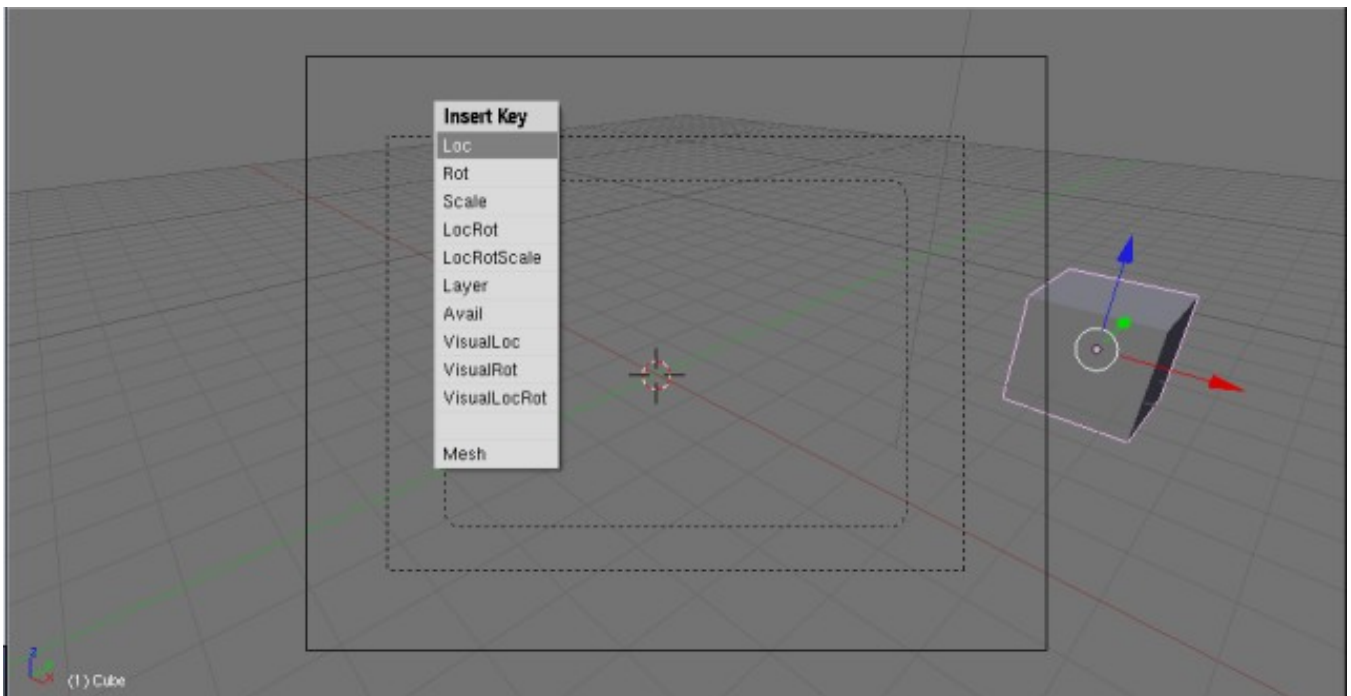
In the Camera View window, notice there are two sets of dotted line rectangles and a solid rectangle. The solid rectangle is the physical boundary of the camera. The outermost dotted line rectangle represents the side to side and top to bottom limits for the object to be viewable by the camera (and ultimately show in the rendered scene). So if we move the object outside of that boundary, the camera will not "see" that object. The innermost dotted line rectangle indicates the top, bottom, and left and right side boundaries of where the object will be visible if you are making a video that will be shown on a television screen. We do not need to concern ourselves with the inner dotted line rectangle for this tutorial.

We are going to learn to give the cube motion. We will need a starting point and an ending point. Our starting point will be on the right side of the screen and the cube will be moved to the left side of the screen. To move the cube to the right side of the screen (it's starting position), place your mouse cursor somewhere inside the 3d window, then press the letter G (stands for GRAB) on your keyboard. The boundary around the cube now turns white. If you move your mouse around, the cube will move along. Move the cube to the right, just beyond the outer dotted line rectangle. Once you have it in position, left-click your mouse, or hit Enter on your keyboard:



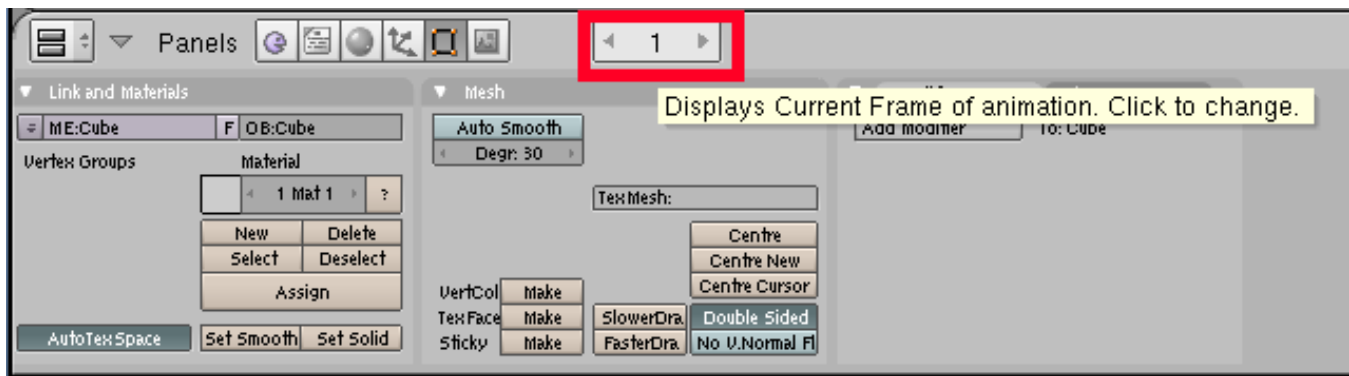
As you move the cube, it may appear to rotate some, it is not really rotating, this is just due to the camera's angle of viewing. Remember, we are working in 3d here, so we need to take into account 3d perspective, which I will not get into here.

The cube is now at it's starting position. We need to tell blender that, so we need to insert an animation key. Making sure that your mouse cursor is somewhere in the 3d window, press the letter I (I stands for Insert Key). This will open up a pop-up window:

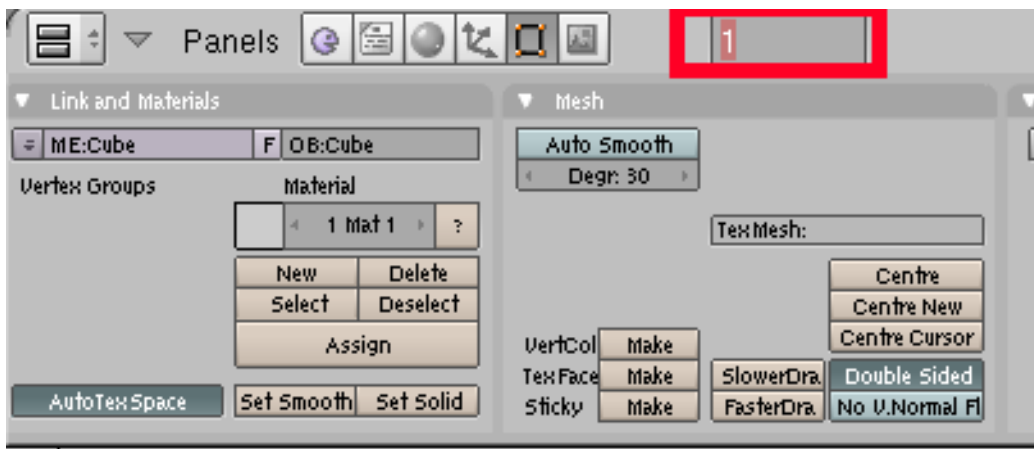


Click on the Loc (stands for Location) selection. We choose Loc because in this animation all that we are doing is changing the location of the cube. We have now inserted our first key(frame) telling blender where to begin the animation.

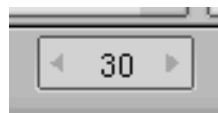
I have chosen to make this a 30 frame animation. When you do your animations, you choose how many frames you wish to use to accomplish your goal. This one will be a short 30 frames.



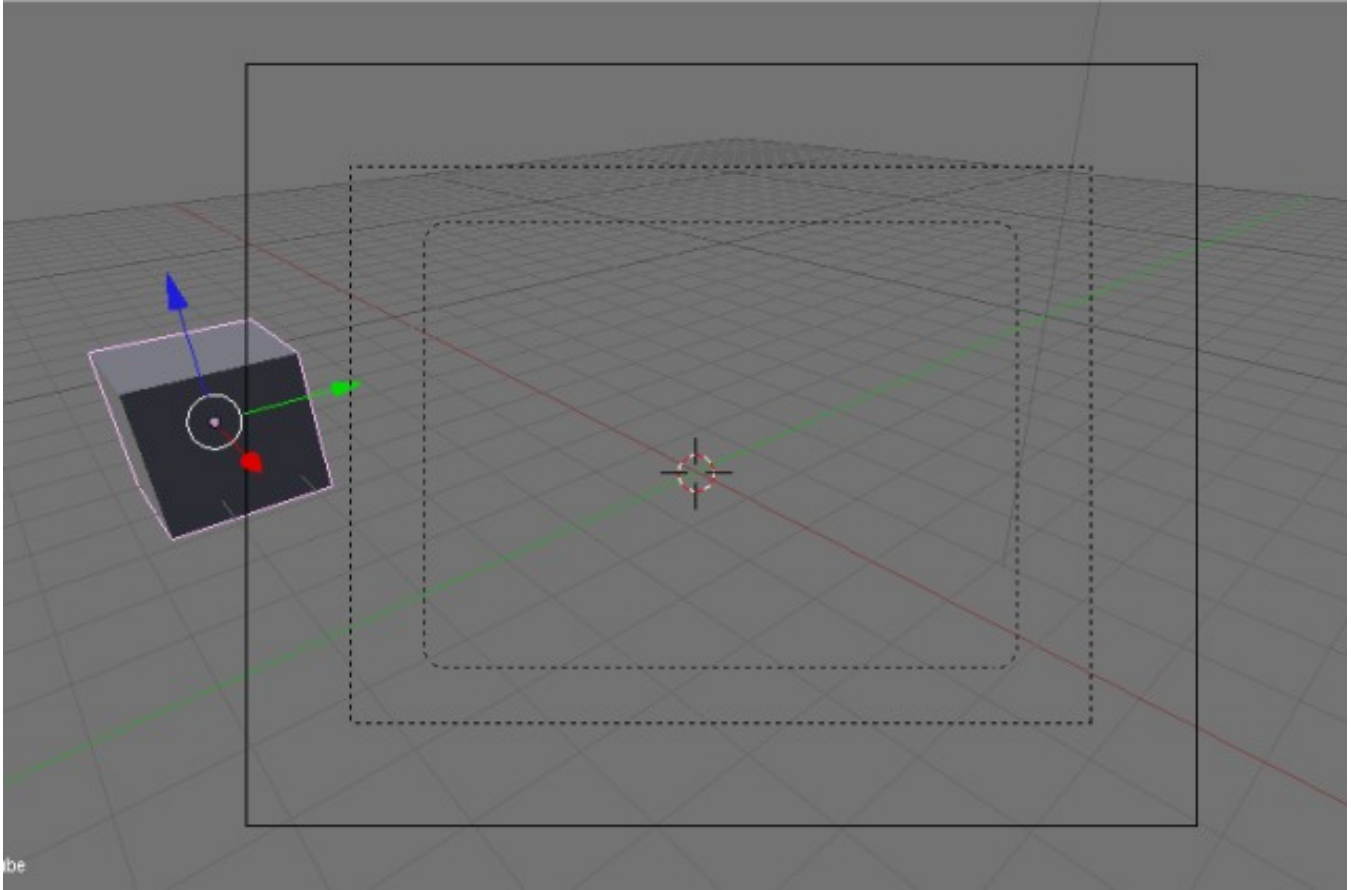
The bottom window (beneath the 3d window) has a lot of buttons (hence it is known as the Buttons Window). We are not concerned with most of them here. I have highlighted in red above the section we need to concern ourselves with. As the caption shows in the image above, this tells us the current frame of the animation. The first frame is naturally 1. We have already set the key for that frame. We now need to change that 1 to a 30. Just place your mouse cursor over the number 1 and click on it. It will change color:



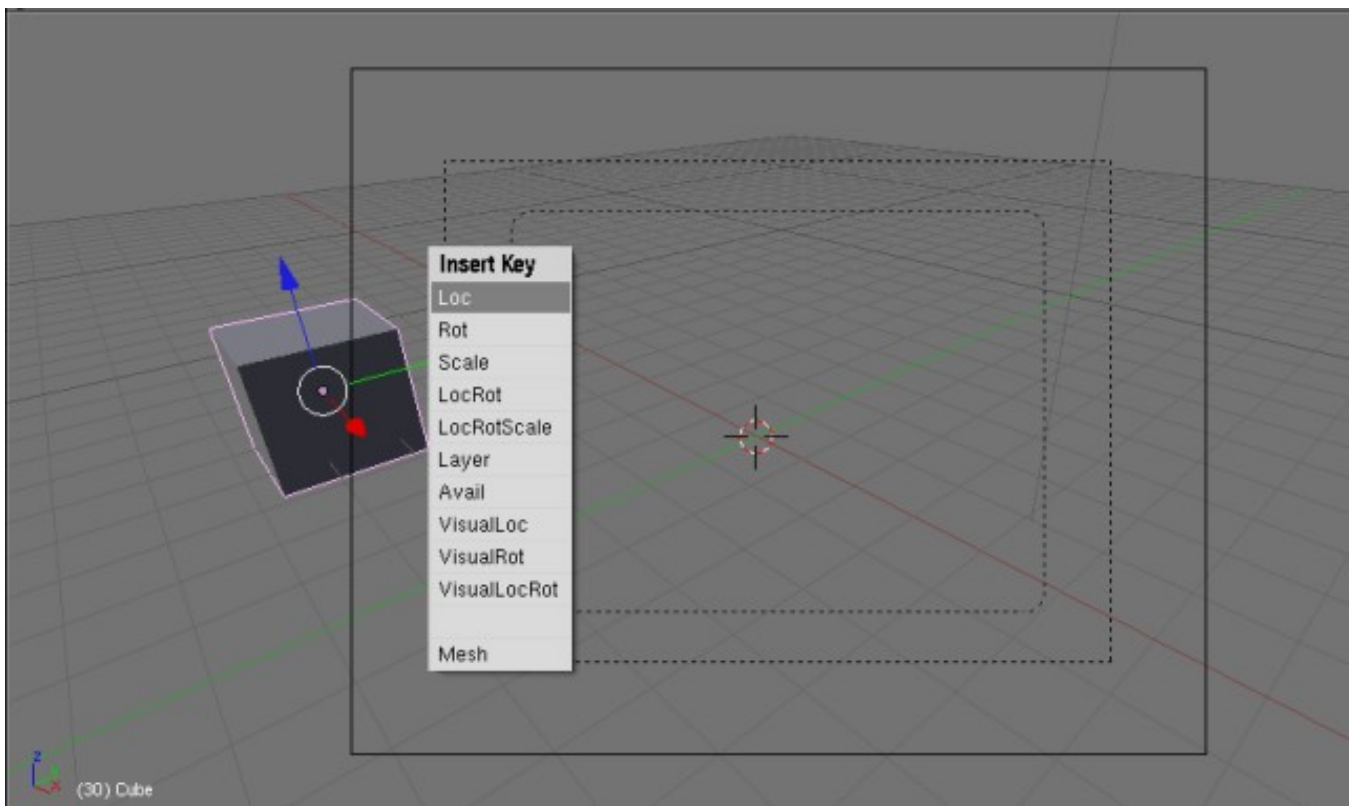
Type in the number 30 and press Enter on your keyboard. We have told blender that we are now dealing with frame 30.



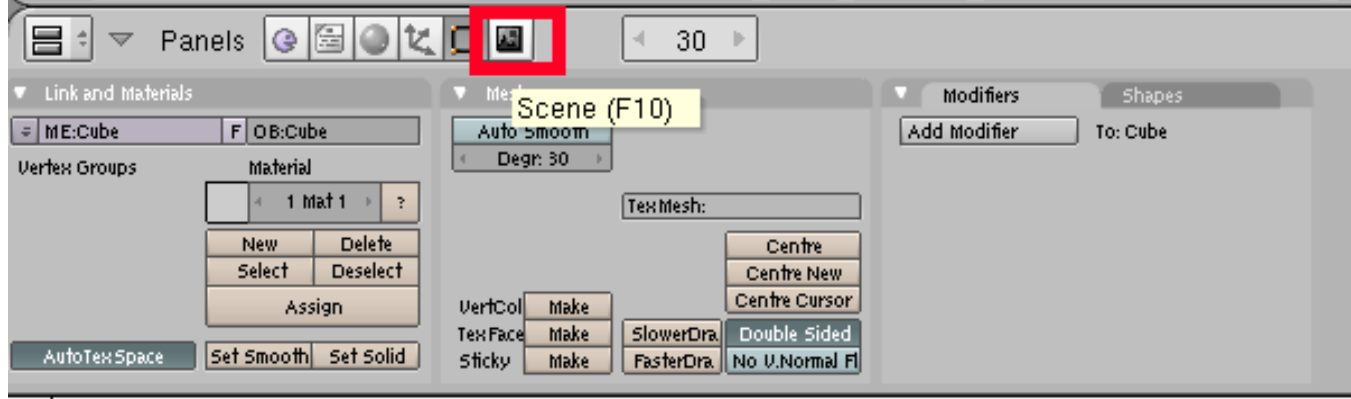
Place your mouse cursor somewhere inside the 3d window and click the G key to again GRAB the cube. This time, move it just beyond the left boundary of the outermost dotted line rectangle. Left-click on your mouse or press Enter on the keyboard once you have moved the cube in position:



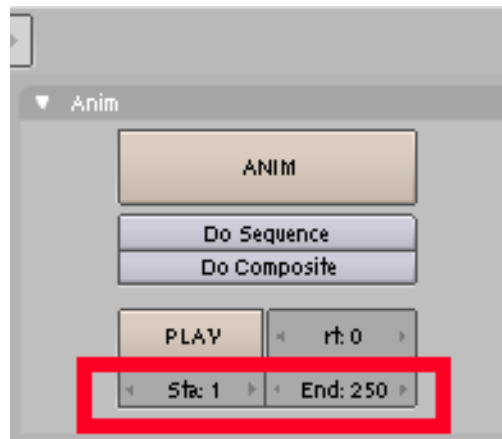
Now place your cursor back up somewhere inside the 3d window and then press the letter I (Insert Key). Again select Loc from the pop-up window. This sets the final keyframe of the animation:



Now move your mouse cursor down to the window with the buttons below the 3d window:



Please click the Scene button (highlighted above) (or F10 if you like shortcuts). This will open the scene buttons panel. There are a number of tabbed sections in this panel. First go to the Anim tabbed section:



At the bottom you will see Sta: 1 and End: 250. These are the Start and End frame values for the animation. We are only doing a 30 frame animation, so we need to change our End frame. Just click on the number 250 and it will change color:



Then enter 30 with your keyboard and press Enter:

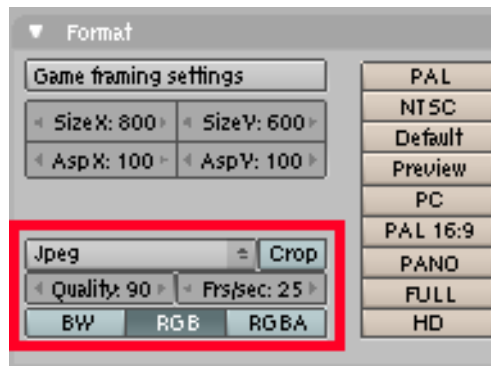


Place your mouse cursor inside the 3d window. You can now press ALT-A (do not press the "-" (dash) key, that is there for showing the key combination to press) and your animation will play in the 3d window above. When you wish to stop the animation, press ESC. Note that to make this animation, all that we had to do was to define the starting and ending point of the animation. Blender calculates the position of the cube for the frames in between the starting and ending points, making life easier for you.

That animation is not the final rendered animation, just a sample for you to watch before rendering.

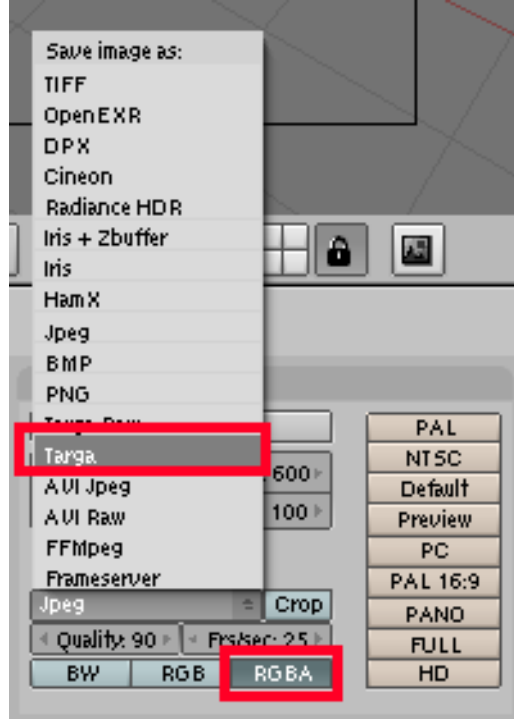
Now that we have the animation complete, let's set up blender for rendering the final result:

Looking at the Scene buttons panel window please look at the Format tab:



For a quick explanation, at the top left you will see SizeX and SizeY. Those refer to the width and height of the final rendered image. We can see that the current image will be rendered to 800x600. We will be changing that soon, but not here.

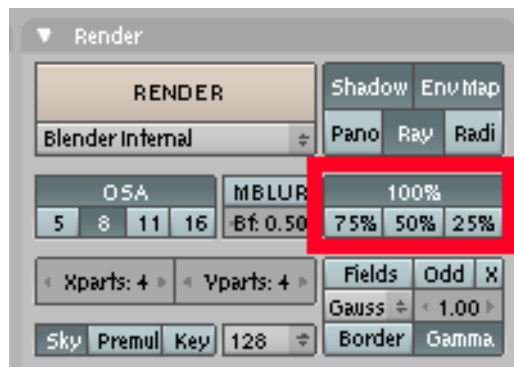
At the bottom left are various settings including those for determining the format of the render, quality settings, framerate, and image color plus alpha settings.



Click the button labeled RGBA. This will allow us to just render our object, the cube. Everything else will be rendered transparent. This will be used then to place our animated cube against a background that we will create using GIMP.

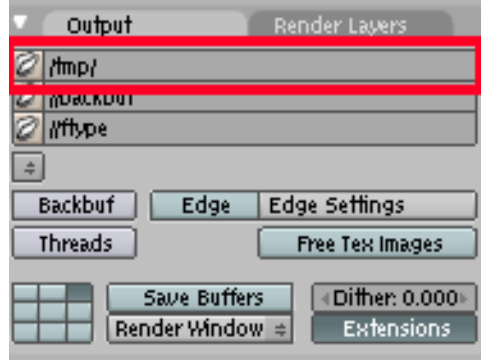
Next click the little up and down facing arrows at the right side of the button labeled Jpeg. A pop-up window will open showing a lot of various file formats to choose for the final rendering. In this case, please select Targa.

Next switch to the Render tab in the Button panel:



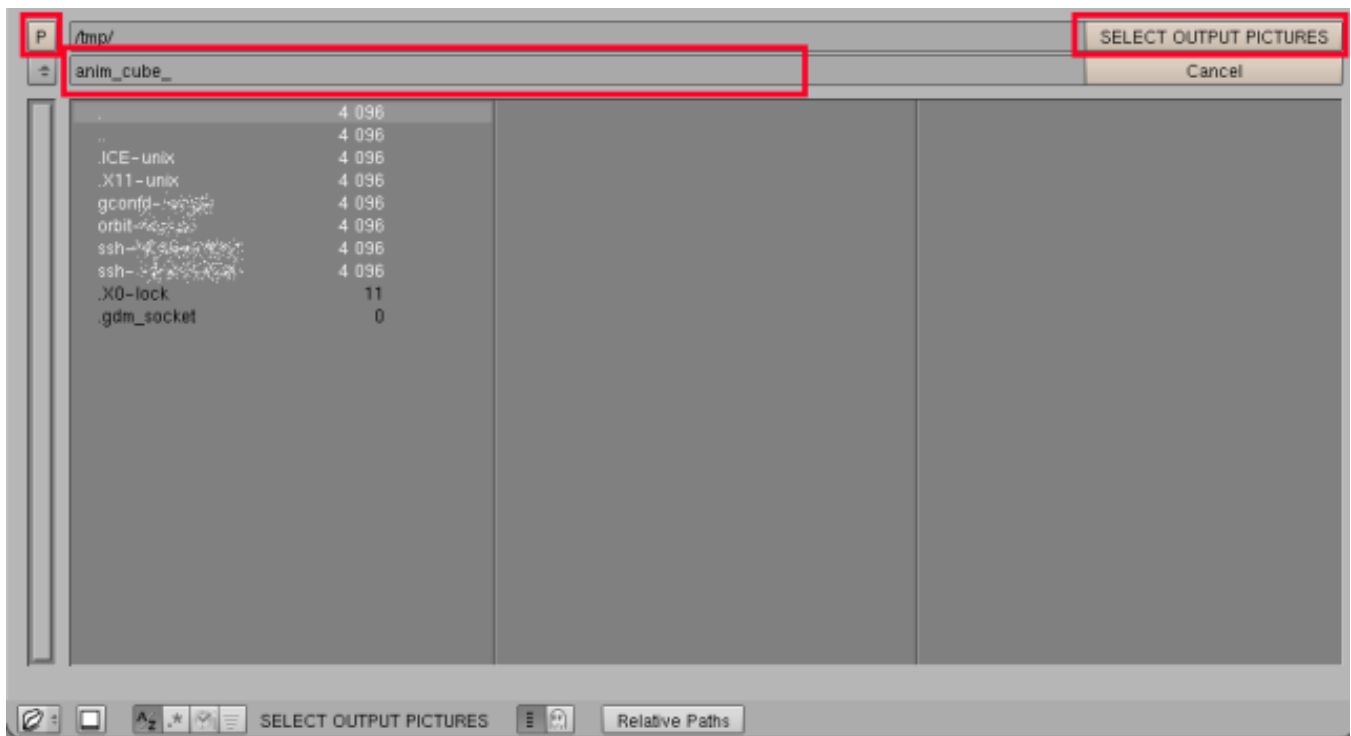
I have highlighted the section we need to pay attention to here. If you press the RENDER button you will see a render window open. It will be 800x600 in size. (We saw that in the Format tab shown above) To close the render window press F11. You may need to press F11 twice to close out the render window. Press the 50% button that is in the highlighted section above. Now when you press the render button, the render window will be 400x300. We will be rendering our animation to this size. Remember to press F11 to close out the Render window if you pressed Render. By the way, if you are at Frame 30, then all that you will see is a rendered blue screen since our object is outside of the camera's viewport.

Look at the Output tab of the Scene Buttons Window:



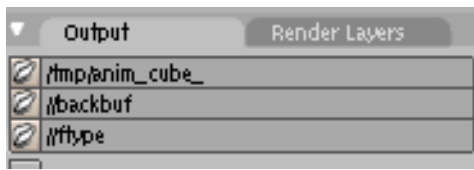
We will be paying attention to the highlighted section shown in the image above. That section will be indicating the folder our final render will be saved to and it will also show the basename for our rendered output images. I am using GNU/Linux and by default Blender places it's results in my /tmp/ folder. If you are using another operating system, the Blender default will differ.

If you click the little folder just to the left of the /tmp/ text box this will change the 3d window above to a File Browser window:



I have chosen to save the rendered output to my /tmp directory. If you wish to save to a different directory than Blender's default save directory, just press the P button (highlighted above). This will take you up one directory. Press it again until you get to the top most directory. In the File Browser window, names colored White are directories, while those colored Black are files. You may click on folders/directories to browse to the folder/directory where you would like to save your final render. Then click inside the text box I have highlighted above and give your render a basename. I have chosen anim_cube_ Please notice that I have used an underscore at the end of the basename. Blender will be making 30 sequentially numbered Targa image files which we will put together using GAP to arrive at our final animation.

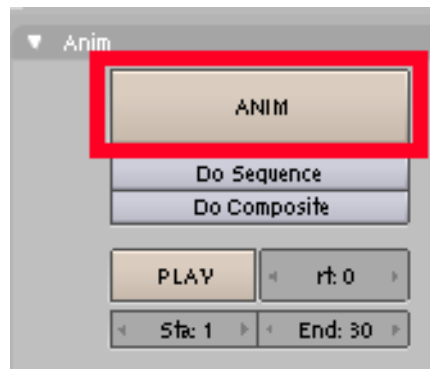
Once you have typed in the basename for your rendered files, press Enter. Then press the SELECT OUTPUT PICTURES button highlighted in the image above:



The Output tab now shows the path to the folder and the basename for our final rendering.

Time to Render:

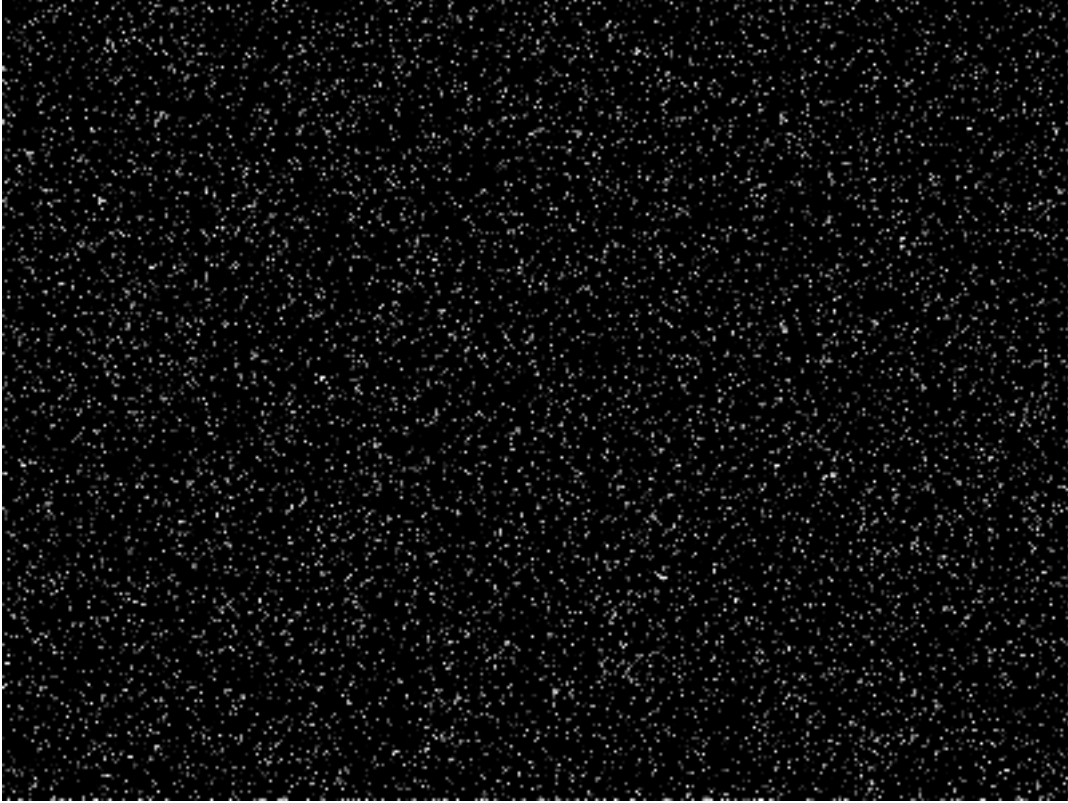
Go to the Anim tab in the Buttons Panel and press the ANIM button:



Blender will begin rendering the animation and saving each separate image file in the folder you have chosen previously. This will take some time depending on the capabilities of your computer. When all of the frames are finished rendering, press the PLAY button to watch your cube move across the screen. When you are finished watching the animation, press the ESC key to stop it. We now continue onto the section using GIMP and GAP to add a unique background to complete the animation.

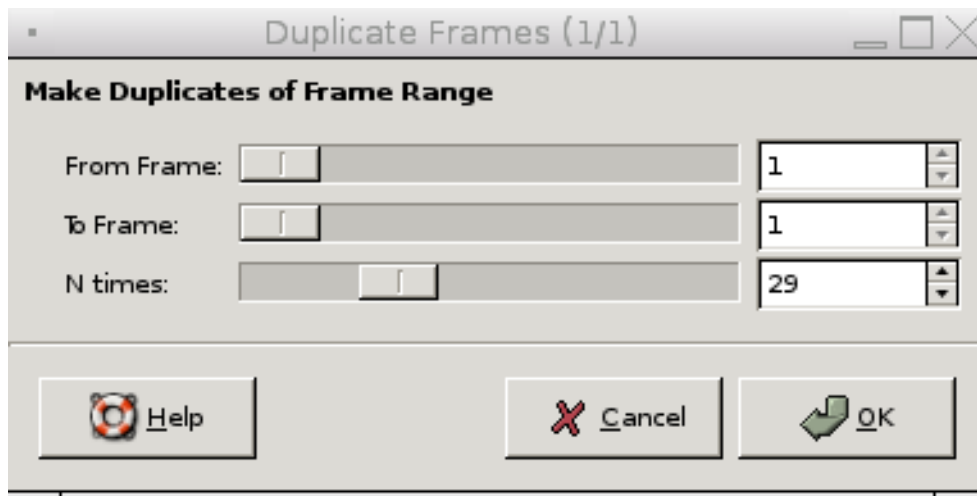
GIMP and GAP: THE LAST MILE

You can get creative or as simple as you like with your background. Open a new 400x300 window in GIMP (that is the size of the images rendered in Blender). Create a background that you might want to use for this simple animation. I made a simple space looking background:



Save that file as background_000001.xcf into a working directory of your choice. We need to make 30 background frames for our animation. (We need at least as many frames as our original animation to see it in it's entirety). So select:

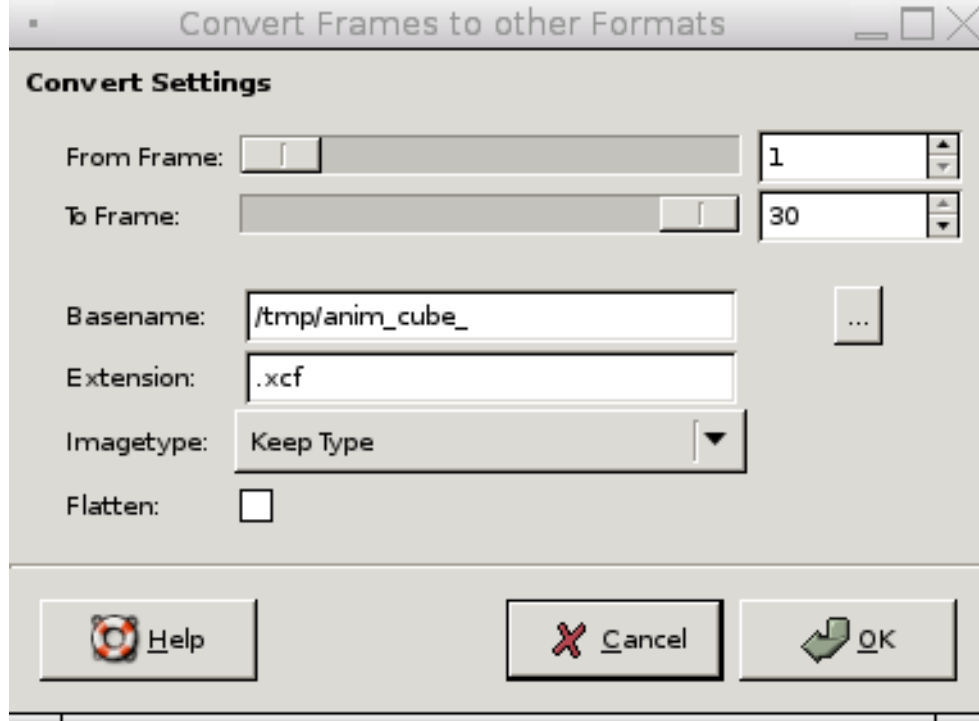
Video | Duplicate Frames



Select a value of 29 for N. We have one frame already. That is background_000001.xcf. So we need 29 more copies to get a total of 30. Then press OK.

Next open the anim_cube_0001.tga file. GAP will understand that you have opened an image file that is part of a series of images. Next select:

Video | Frames Convert

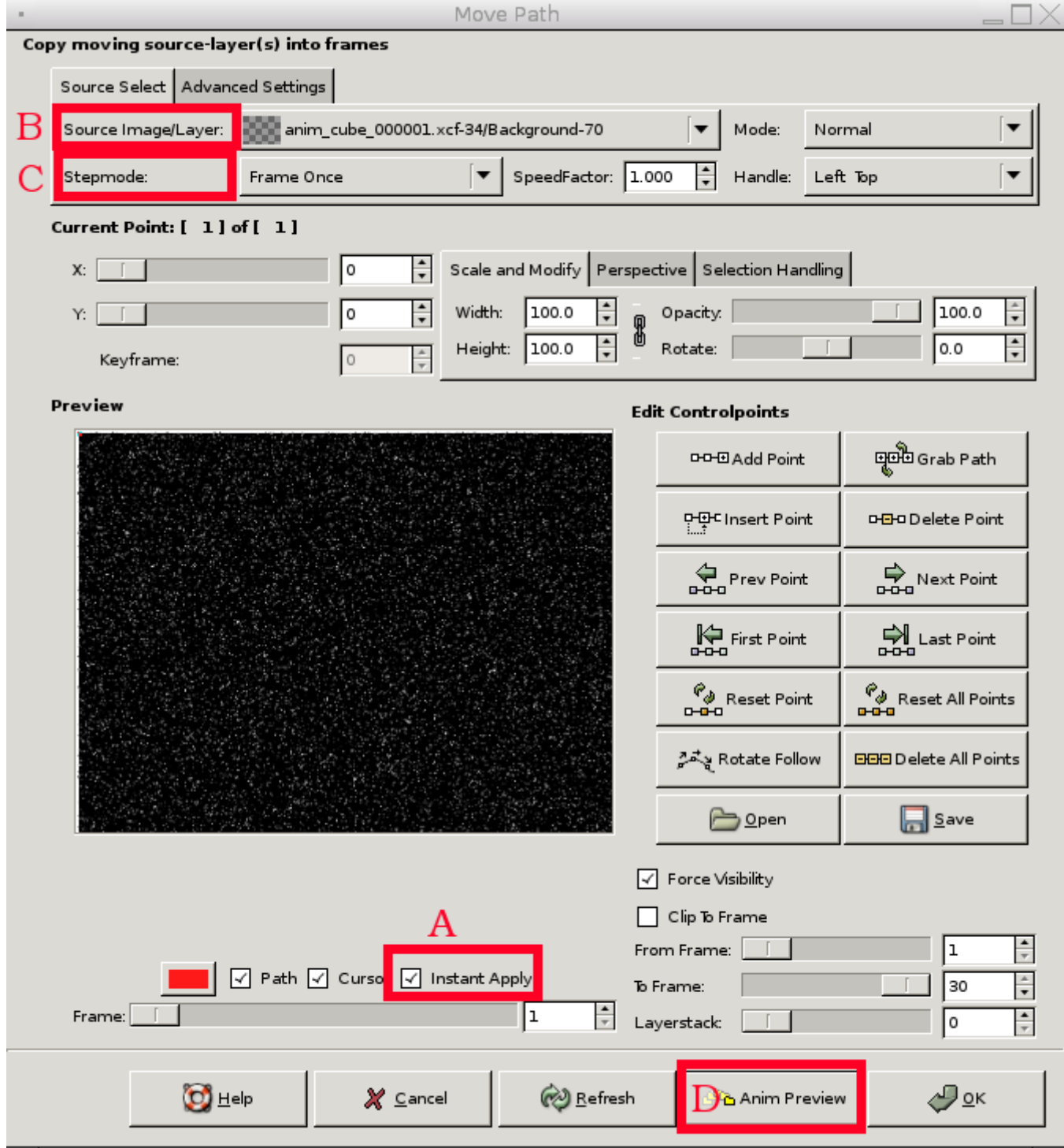


You may leave From Frame and To Frame alone here. You may leave Basename and the Path GAP has chosen or you may click on the button to the right of the text box for the Basename and select the directory path and basename for the converted image files. We are going to convert the frames to XCF files to make it easier for GAP to work with them. Extension to use is .xcf. Imagetype may be left as Keep Type. Finally uncheck the Flatten checkbox. If we would flatten the image, we would lose the transparency information in the image. Once you have adjusted your settings, click OK.

A new image window will open up. If you used anim_cube_ as your Basename, then the image opening will be named anim_cube_000001.xcf. This is the first frame of the cube animation. You may close out the anim_cube_0001.tga file.

Now select the background_000001.xcf image window and select:

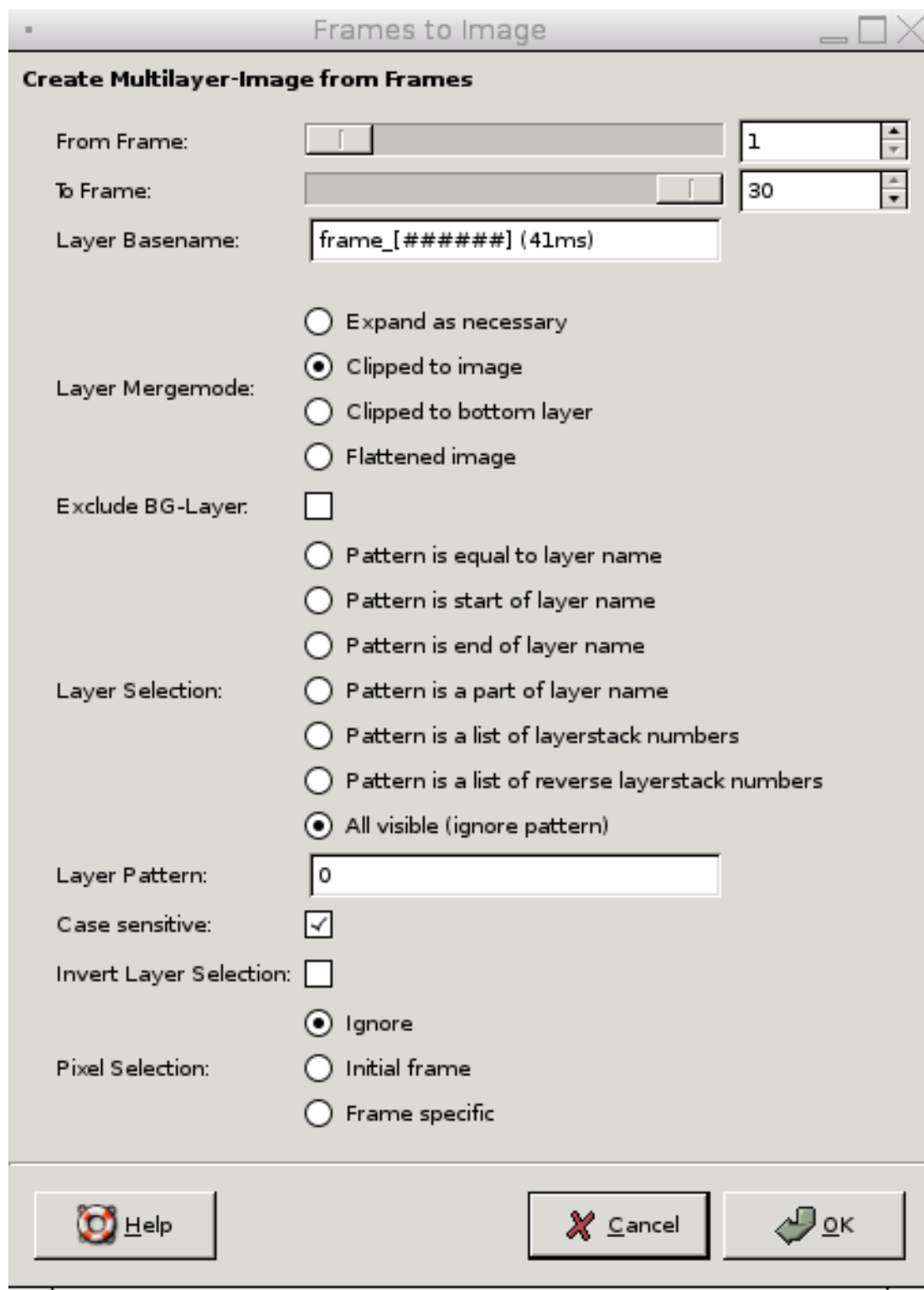
Video | Move Path



In the Move Path window that opens, check Instant Apply (A). For your Source Image/Layer (B), make sure anim_cube_000001.xcf has been selected from the drop down box that opens by clicking on the arrow at the right side of the box. If you chose another Basename, then make sure frame 1 is selected. For Step Mode (C) choose Frame Once from the drop down box that opens by clicking on the arrow at the right side of the selection box. We choose Frame Once for Step Mode because we want each of the 30 frames of anim_cube_XXXXXX.xcf to show once during the 30 frame animation. Then click Anim Preview (D) . In the window that opens, select Exact Object on Frames and click OK. A little preview window will open. Play the animation, then close out the preview window and the little image window that gets created, and select Don't Save. Then click OK in the Move Path window.

Then select:

Video | Frames to Image



Accept the defaults unless you want to or know how to change some parameters and click OK. This will create a new multilayered image file. From this newly created image window select:

Filters | Animation | Optimize (for GIF)

Again another new multilayered image window is created. From this image select:

File | Save

Save the file to a file named anim_cube.gif and click OK.

Another window will open:

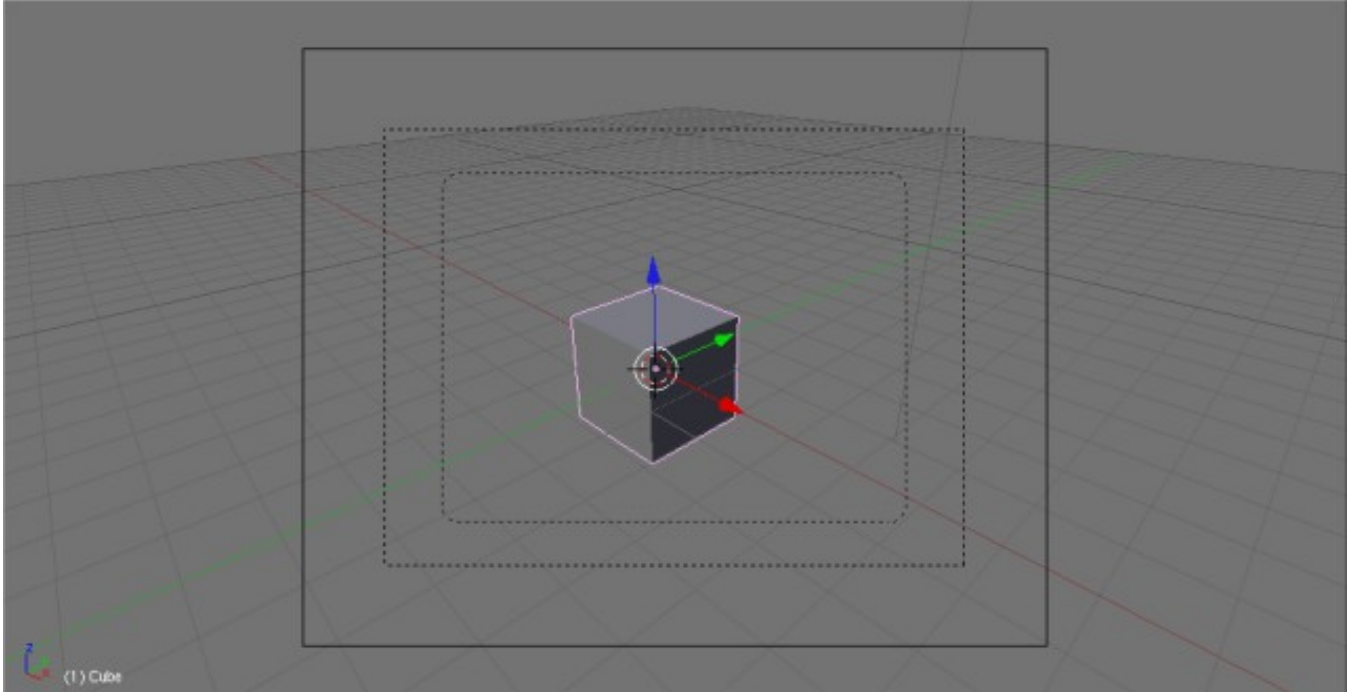


As shown above, select Save as Animation and then click on the Export button. Another window will open. Accept the defaults there and click OK. Your animation combining GIMP and BLENDER has now been saved.

Simple Object Rotation Animation

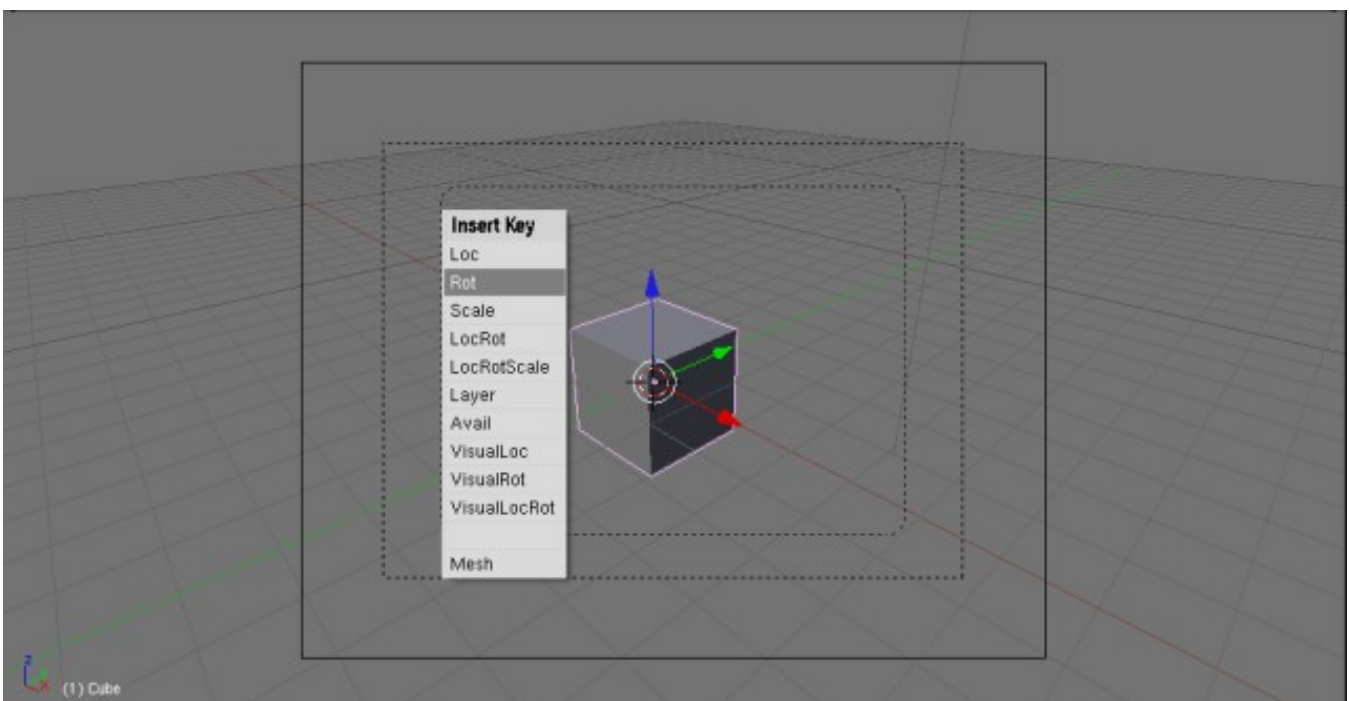
In this portion of the tutorial, we learn how to animate the rotation of an object (the default cube in this case). Open Blender, or if you have it already open click on File | New to start a new fresh project.

Then go to Camera view by either clicking on the View | Camera selections at the bottom of your 3d window, or you can just type the number zero with your numpad keys. (Do not type the number zero from the number keys above your letter keys, only use the zero from your numpad keys).



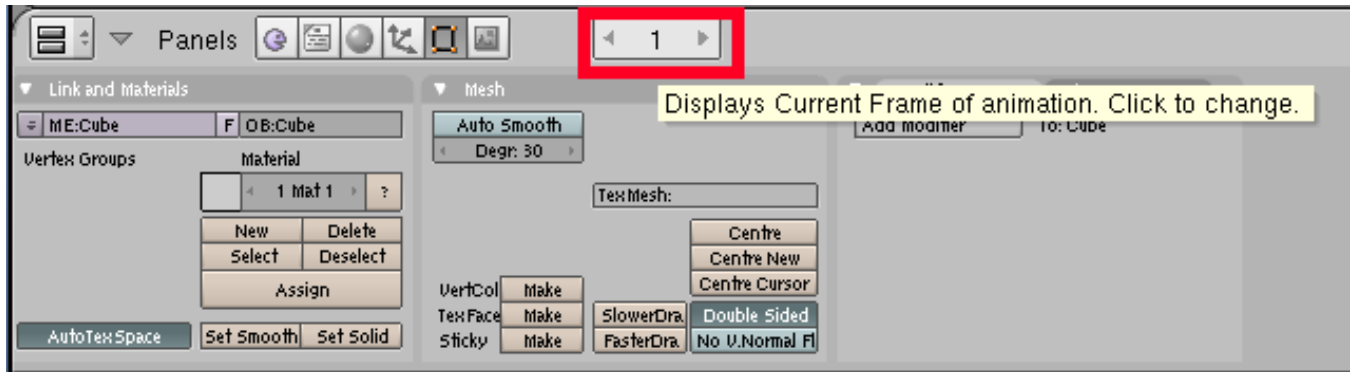
To rotate the selected object, place your mouse cursor somewhere inside the 3d window, then press the R key (R for rotate) on your keyboard. The boundary around the cube changes from pink to white and if you move your mouse around the cube will freely rotate. While you are freely rotating your cube, please look to the bottom left of the 3d window. You will see the word Rot followed by a colon and then followed by a number showing you the angle of the cubes rotation. We are not concerning ourselves with rotations about various axes in this tutorial, just a simple rotation. Now please hold down the CTRL key while rotating your cube and you will see that the numbers after Rot: change in increments of 5 degrees. So you can see it would show values such as 0.00, 5.00, 10.00, 15.00, etc. After trying the rotation feature out, press either the ESC key on your keyboard, or right-click with your mouse. This will return the cube to it's original position.

As with the above animation, we need a starting and an ending point. For this animation, our starting point will just be the default setting for the cube. We must now insert a starting key(frame) to set the first frame of the animation. Place your mouse cursor anywhere inside of the 3d window and press I (for Insert Key) on your keyboard:



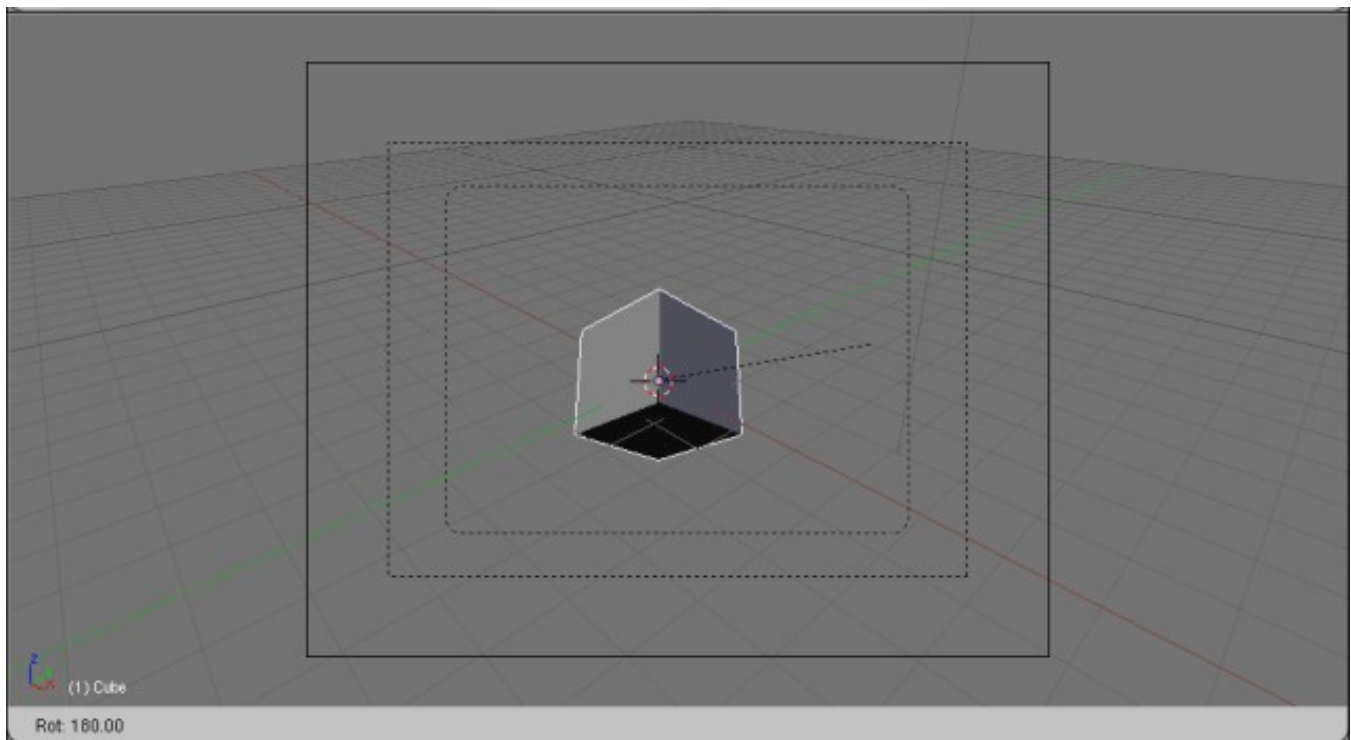
This time we select Rot (for Rotation) from the pop-up window. We are telling blender we will be doing a rotation animation on this object, so we need to insert a rotation key.

Just as in the first tutorial section above, we will be making a 30 frame animation. Before entering our final animation key, we must switch Blender to frame 30. To do this, look at the button window located below the 3d window:



Click on the number 1 in the highlighted box. It will change color indicating you can now change it's value. Type in the number 30 and press the Enter key.

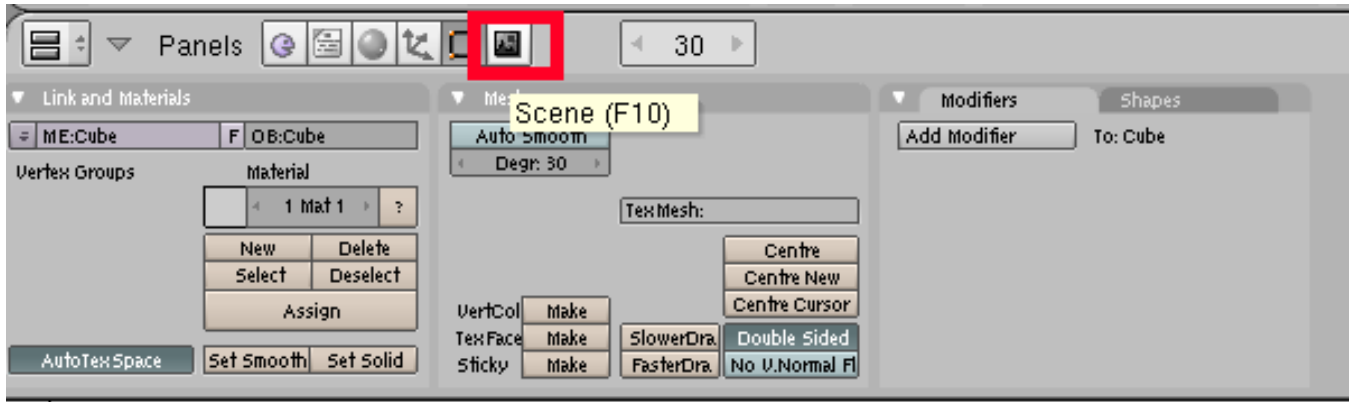
Place your mouse cursor inside the 3d window then press R on your keyboard. Then holding down the CTRL key rotate your cube 180 degrees. Remember you can see the degree of rotation by looking at the bottom left of the 3d window:



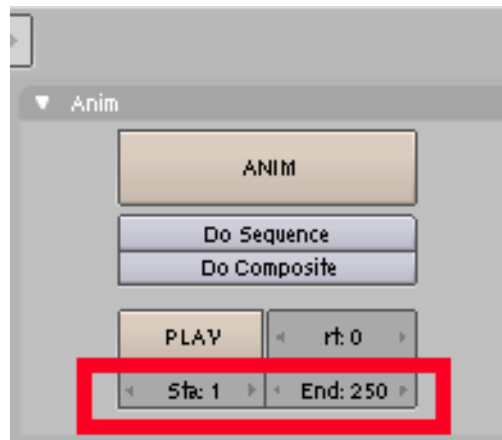
Once you have rotated the cube to the desired angle (180 in this case) left-click with your mouse, or click Enter on your keyboard. This will be the ending point of our animation. We changed to the final frame of our animation. We rotated our object from it's original position. Now we will insert the end point animation key. Place your mouse cursor back inside the 3d

window and press the I (stands for Insert Key) key on your keyboard. Again a window pops up. Just as before, click on Rot.

As before, we need to switch to the Scene buttons window:



Click on the Scene button highlighted above, or press F10 on your keyboard (shortcut method). Go to the Anim tabbed section:



In the highlighted section above Sta: refers to the starting frame of the animation, and End: for the end frame. We need to change the end frame to a value of 30. Click on the 250 with your mouse. The number will change color, indicating you can now change it's value. Type in the number 30 and press Enter:



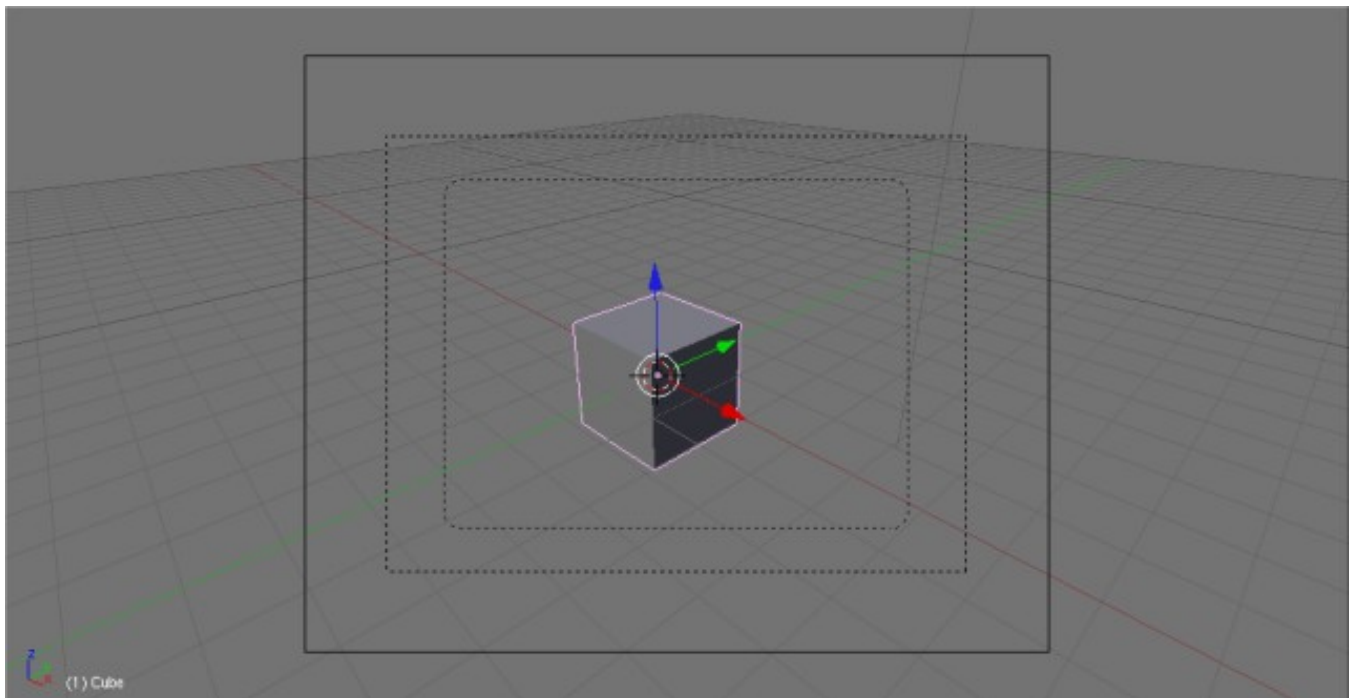
Now to watch the animation in a 3d window, click ALT-A (make sure your mouse cursor is inside of the 3d window before doing so). When finished watching your animation, click on the ESC key. To complete the rendering and processing in GIMP and GAP, please go to the part of the first tutorial labeled: **Now that we have the animation complete, let's set up**

blender for rendering the final result The only parts you will want to change are naming your blender animation output image files. In the above tutorial, a basename of **anim_cube_** is used. We could change that basename to **rotate_cube_** for instance. You will also want to change the name of the final gif file saved.

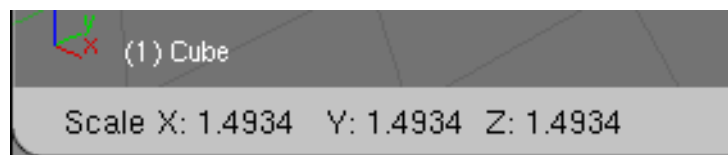
Scaling Object Animation

In this final tutorial, we will be making an animation where the size of an object changes.

To begin, either start Blender or if you already have it opened, click on File | New to start with a new default setup. You can press the zero numpad key to then get your 3d window into Camera view, or you can click View | Camera from the headings at the bottom left of the 3d window:



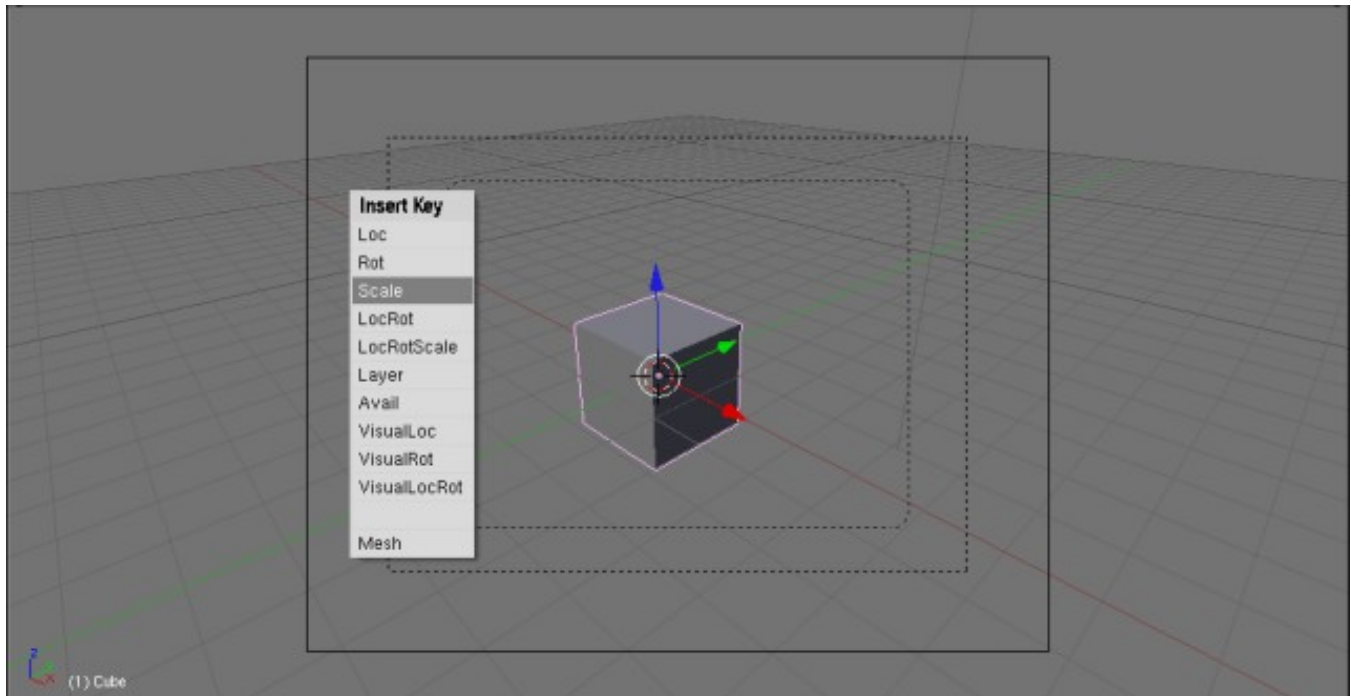
This time, with your mouse cursor anywhere inside the 3d window, press the S key on your keyboard. (S for scale/size). The border around the cube will change from pink to white. If you now move your mouse around, you will see the cube changes size. Also notice that while you are moving your mouse, at the lower left just below your 3d window, there are three values representing the 3 dimensions that the object is scaling along:



If you hold down the CTRL key while dragging your mouse, you will see the Scale values all change in increments of 0.1 (one-tenth). This is one way to get some basic control of the scaling of your object. In more advanced tutorials, you can limit scaling to one or two dimensions (or axes) for even more interesting effects. Once you have tried this out, please either do a right-click on your mouse, or click the ESC key on your keyboard. This will set the cube back to it's position before you clicked the S key.

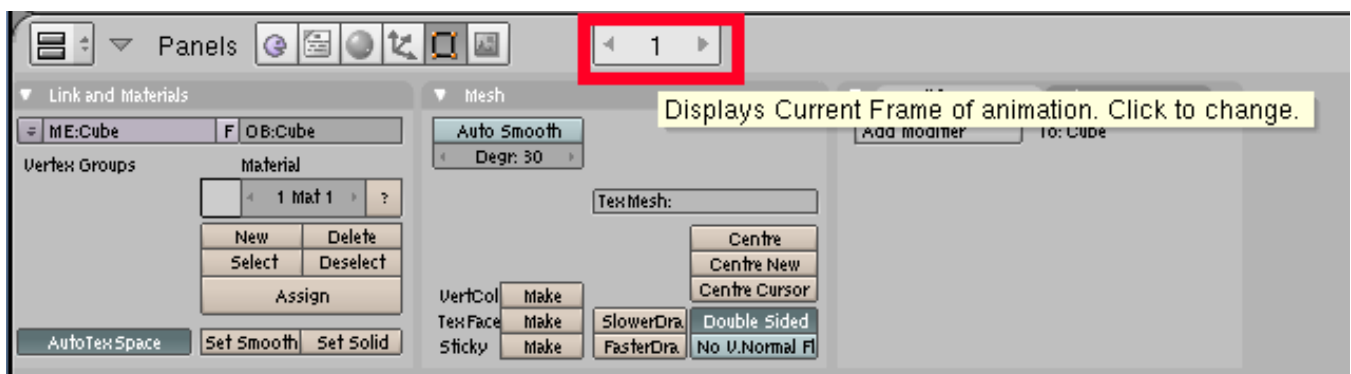
This animation will have three animation keys (or keyframes). We will start with the cube at it's default size. We will then animate it doubling in size. We will end the animation with the cube being returned to it's original size. So we will be adding a key at frame one (always add a key at your first animation frame) when the cube is at it's original size, then another key will be added at frame 15 where the cube will reach double size, and the final key will be added at frame 30 where the cube again is returned to it's original size. Again, I have arbitrarily chosen to make a 30 frame animation. You may wish to experiment with more or less frames. Your results will vary.

Let's add our first key. Place your cursor anywhere in the 3d window and then click the letter I (for Insert Key):



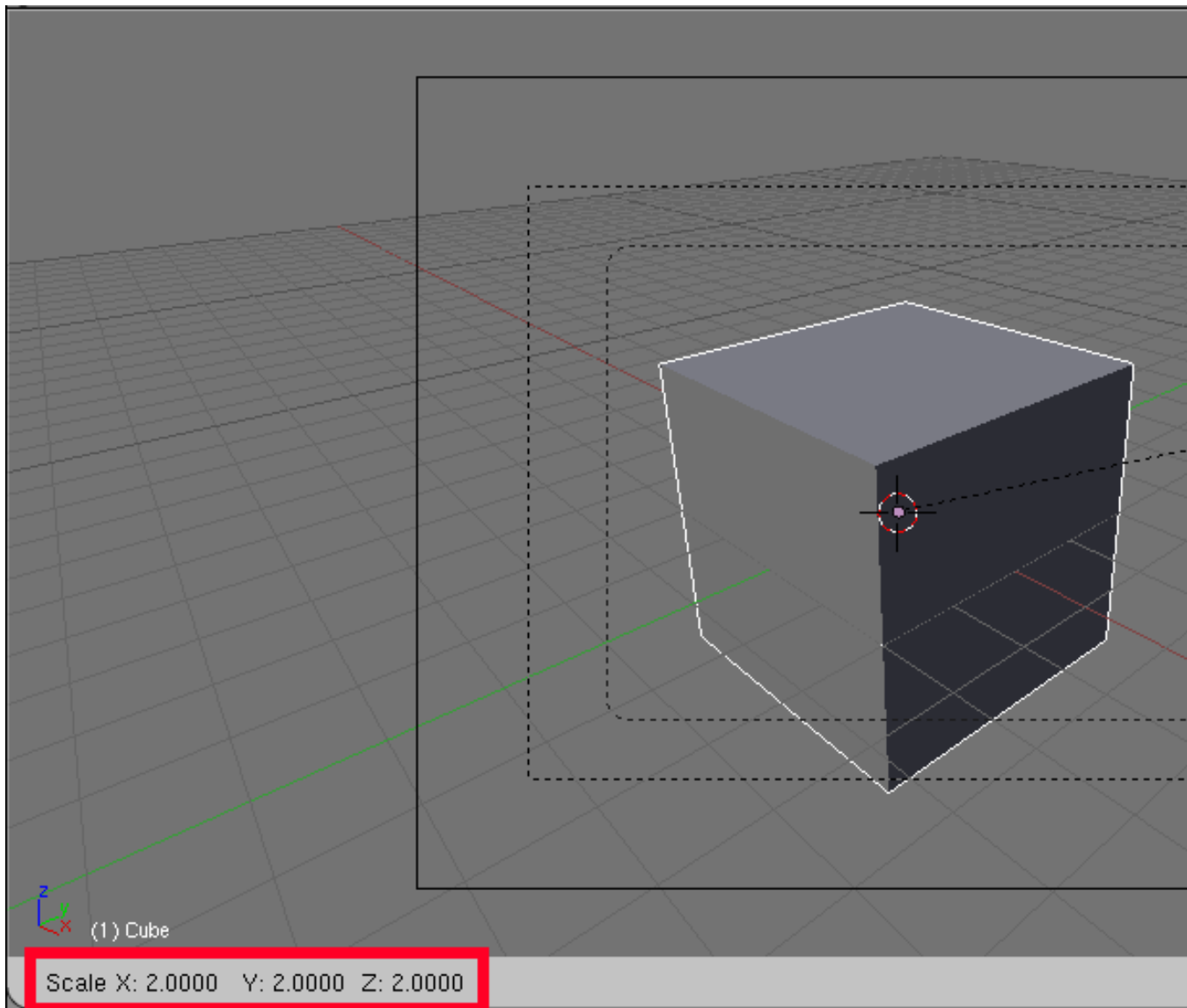
In this instance you select Scale from the Insert Key pop-up window since we will be scaling (or resizing) our object. We have now added our first scale animation key.

We will set Blender to frame 15 before inserting the next animation key. The box indicating which frame Blender is in is in the Buttons Window which can be found below the 3d window in Blender:



Click on the number one in that box. The number will change colors indicating you can change it's value. Type in the number 15 and press Enter on your keyboard.

Next, place your mouse cursor inside the 3d window and press the S (for scale/size) key on your keyboard again. This time, hold down CTRL and scale your cube such that the Scale values at the bottom left just below the 3d window all are value 2.0000:

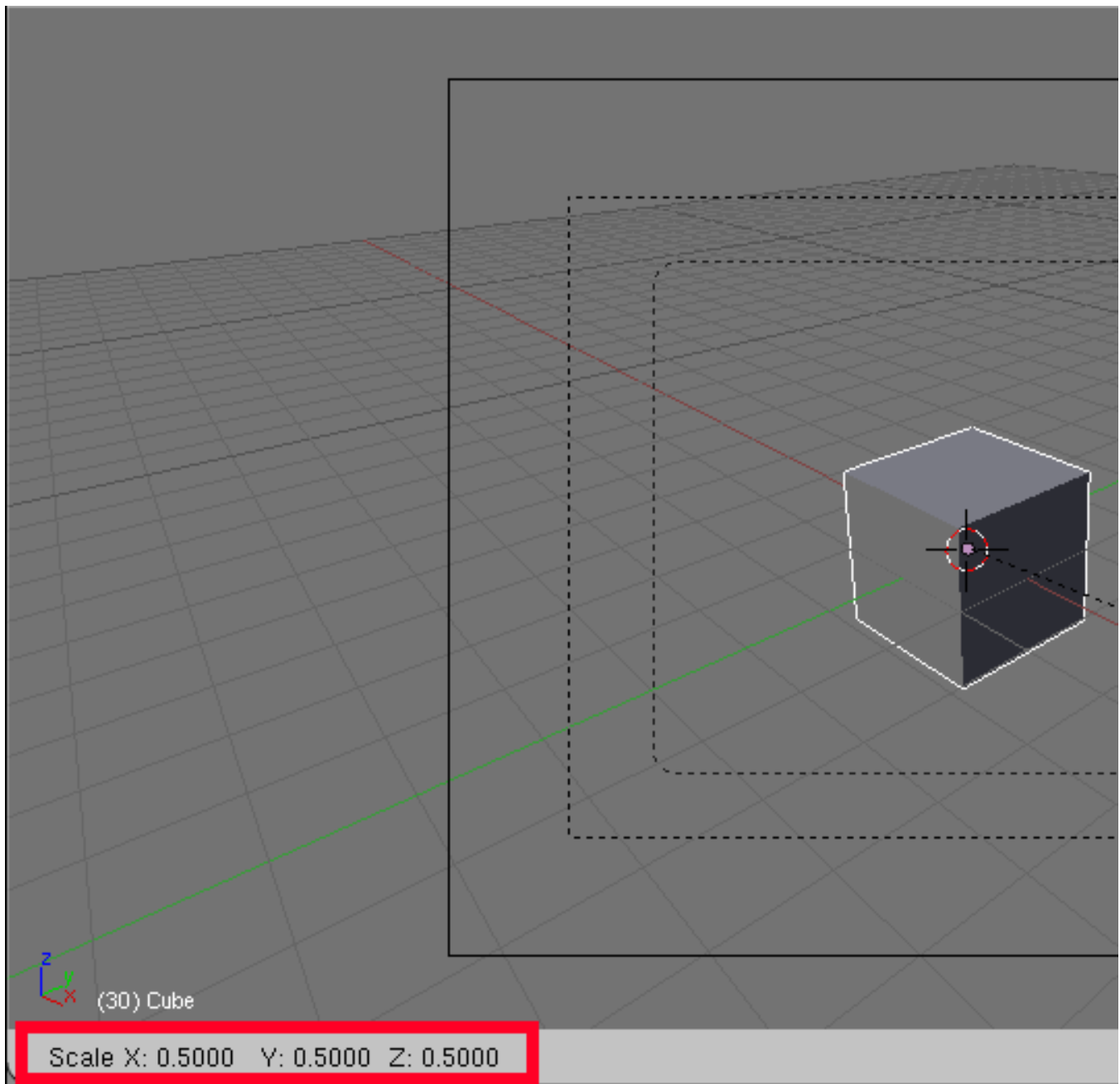


When you reach that value, left-click with your mouse, or press the Enter key on your keyboard.

Then move your cursor to the 3d window and press the letter I (for Insert Key) on your keyboard. Just as above, select Scale in the pop-up window that opens. We have just entered our second animation key.

Go back to the frames box in the Buttons Window beneath the 3d window and change the animation from frame 15 to frame 30 by clicking on the number, enter the number 30, then press Enter on your keyboard.

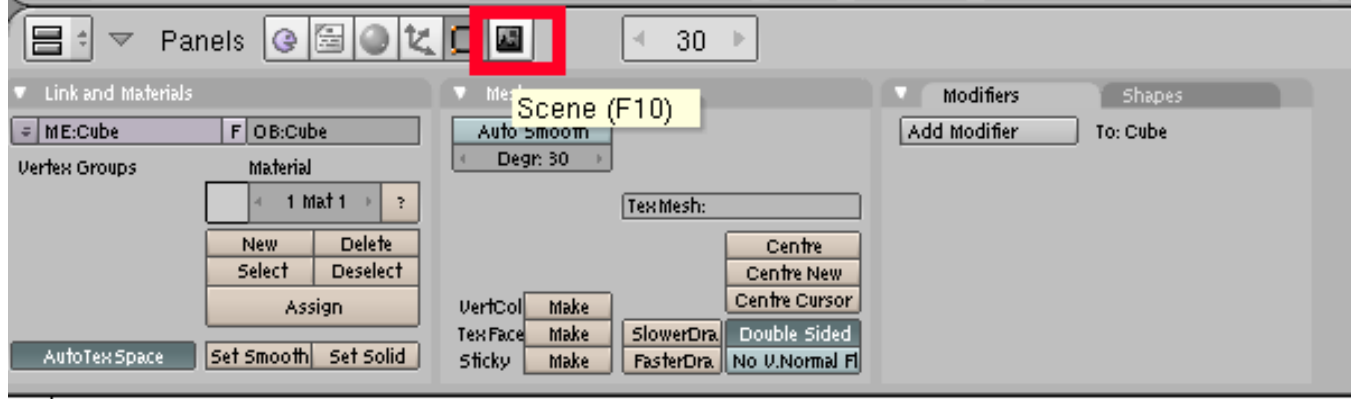
Place your mouse cursor inside of the 3d window and press the S key (S for Scale/Size) on your keyboard. Again, the pink border around the cube turns white. Hold down the CTRL key while scaling the cube. This time you need to scale it to the point where each Scale value, shown in the lower left just below the 3d window, reads 0.5000:



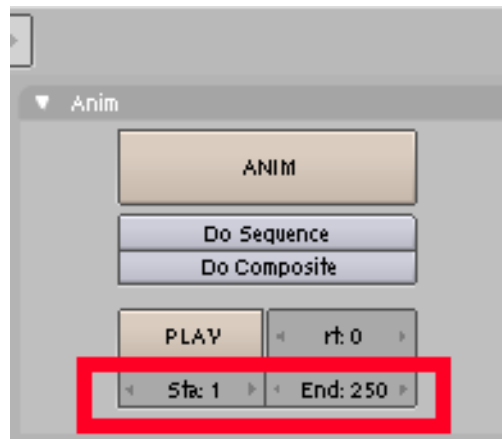
The reason that we scale to a value of 0.5000 is because the cube was doubled in size. So to scale it back to its original size, we must scale it to half of that doubled size. Once you have reached that size, left-click or press the Enter key on your keyboard.

Place your mouse cursor again in the 3D window and press the I (Insert Key) key. Again select Scale from the pop-up window. That sets the final key(frame) for the animation.

Now switch to the Scene button window by pressing the Scene button (shown below) or by pressing F10 (shortcut):



Next go to the Anim tabbed section:



Change the End frame value from 250 to 30 by clicking on the number 250, then type in the value of 30 on your keyboard and press Enter. You may now preview your animation by pressing Alt-A.

To continue on to rendering and using GIMP and GAP to complete this animation please go to the section in the first part of the tutorial titled: [**Now that we have the animation complete, let's set up blender for rendering the final result.**](#)

The only changes you will need to make is in the basename for saving the final render. You could choose the name **scale_cube_** for the rendered image sequence basename. Also you will want to change the name of the final gif file created.

These three tutorials attempted to help you learn to do simple object animations in Blender. You were also introduced to some basic Blender concepts in these tutorials. These tutorials are not comprehensive, but meant to provide you with an introduction to animation in Blender. If you find yourself with more questions after following these tutorials, consider that a good thing. It means you have begun your journey into learning Blender. It is my belief that learning simple tasks can help you gain some basic skills in using Blender for animation. Hopefully those skills will help you to eventually understand more complex tutorials. As indicated in the beginning, this tutorial was not about making models, adding materials and texture to an object, lighting, or any of the other myriad number of things Blender is capable of. Thanks for trying the tutorials.

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